

Amendments To The Drawings:

Replacement Drawings are attached in which the figure numbers are in English instead of German.

Remarks

This Amendment is in response to the Office Action dated **May 12, 2009**. **A two month extension of time is required and requested to make this response timely.**

The specification has been amended to include a brief description of the drawings as required. The drawings are replaced with a set that does not include German language for the figures.

§103(a) Rejections

According to the official action claims 1 to 18 are rejected as being unpatentable over Jones et al., US 2002/0193463 (Jones '463) or Jones '463 in view of Heindl et al., U.S. Patent 5,852,096 (Heindl '096).

The Examiner admits that Jones et al. does not teach post-curing the particles at a temperature of 800° - 1200°C. However, the examiner argues that it has been obvious for a skilled person to optimize the furnace temperature since the conversion of silica gel and silica glass as well as a formation of holes the disc is influenced by the temperature of the furnace.

The above argument clearly does not support examiner's conclusions because this prior art teaches the skilled person to convert silica into silica glass while forming holes in the disc. Consequently, if at all, the skilled person would have optimized the furnace temperature so that particles having porous walls are provided and the fracture toughness and wear resistance of a dental material containing the filler particles and a matrix material is improved (cp. paragraph 9, abstract and statement

statement dated July 29, 2006 in copending EP 1 124 529 B1). Investigations of the present applicant have verified that post-curing at temperatures around 600°C leads to torus-shaped filler particles having porous surfaces and post-curing at 800°C – 1000°C leads to particles with non-porous surfaces. Thus, the treatment temperature of 600°C disclosed in Jones et al is an optimum for producing a filler for dental composite materials taught by Jones et al. So any attempt to optimize the furnace temperature for obtaining filler particles taught by Jones et al. would lead the skilled person to a temperature around 600°C.

The prior art, however, prevents the skilled person from utilizing furnace temperatures in the range of 800°C to 1000°C so that torus-shaped particles with a non-porous or smooth surface are provided.

Insofar, the Examiner argues that Heindl et al. teaches a silicone dioxide based filler for dental materials wherein the filler is fired at 500° to 1000°C after drying in order to reduce the percentage of silanol groups on the surface. According to examiner's belief, it would have been obvious for the skilled person to combine firing at a temperature of 500° to 1000°C after drying as taught by Heindl et al. in the invention of Jones et al. and the skilled person would have been motivated to do so since Heindl et al. suggests that the firing provides a reduced percentage of silanol groups on the surface of the filler.

Heindl et al. does not teach to fire a filler at 500°C to 1.000°C but to fire spherical oxide particles with an average particle diameter between 0,1 to 1 µm which are incorporated as component (A) of an inorganic composition which is incorporated in a dental composite material. Fine oxide

Fine oxide particles (B) having an average diameter of not more than 0,1 μm are also incorporated into the inorganic composition wherein the particles (A) and (B) are greatly aggregated to particles with pore diameters not under 0,08 μm . The inorganic composition is the filler of the dental composite material and not the spherical particles (A).

Before the inorganic composition is produced, the spherical particles are fired at 500°C to 1.000°C in order to reduce the percentage of silanol groups on the surfaces and to stabilize the spherical particles with an average particle diameter between 0,1 to 1 μm . The spherical particles are not fired for providing them with a non-porous or smooth surface. Thus, component (A) particles are provided. Thereafter, the inorganic composition is produced from component (A) and (B) particles. The inorganic composition, respectively filler, has a surface treated with a silanol. The filler is not fired at 500°C to 1.000°C (compare col. 2, line 58 to col. 3, line 15).

According to Heindl et al. the spherical particles are fired to reduce the percentage of silanol groups and hereby stabilize the spherical particles having an average diameter between 0.1 to 1 μm . According to this citation, firing is a specific measure to provide a specific component for producing a specific filler. The filler, however, is not fired. The skilled person would also not contemplate to fire the filler at 500°C to 1000°C because this would be contradictory to the silanol treatment of its surface. There is no indication in Heindl et al. to fire a filler for providing a filler with a non-porous or smooth surface and that such surface could improve the filler.

Consequently, Heindl et al. would not motivate the skilled person to fire filler particles produced according to Jones et al. at a temperature of 800°C to 1.000°C. Jones et al. teaches firing of

the particles at 600°C for providing porous surfaces and improving fracture toughness and wear resistance of a dental material containing the filler particles. Heindl et al. does not motivate the skilled person to depart from this teaching. Especially, it would not make sense for the skilled person to fire filler particles for reducing the percentage of silanol groups on the surface. To the contrary, Jones et al. teaches to silanize the particles for producing a hydrophobic filler having good compatibility with a hydrophobic polymeric organic binder [0064].

The combination of Jones et al. and Heindl et al. doesn't render the inventive material obvious.

The inventive composite material comprises a filler having a smooth surface allowing to significantly increase the amount of torus-shaped filler particles within a resin matrix. Additionally, the compatibility of the filler particles with the polymeric resin matrix is improved because the filler particles are silanized and consequently, their hydrophobicity and compatibility with the organic resin matrix are improved. Consequently, the inventive composite material provides better mechanical properties than the prior composite material taught by Jones et al. (comp. results of investigation attached to previous response to official action). The advantages of the inventive material over the prior art also indicates non-obviousness.

Conclusion

It is respectfully submitted that claims 1-7 and 9-18, as amended, are patentable over the cited references. An early notice to that effect is requested.

Respectfully submitted,

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